



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,424	10/01/2003	Manabu Akamatsu	008312-0306166	5643

909 7590 06/07/2006

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER

CHASE, SHELLY A

ART UNIT	PAPER NUMBER
----------	--------------

2133

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/674,424

Applicant(s)

AKAMATSU, MANABU

Examiner

Shelly A. Chase

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

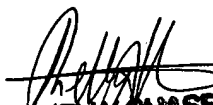
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


SHELLY CHASE
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date: _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1 to 15 are presented for examination.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119, which papers have been placed of record in the file.

Information Disclosure Statement

3. The references listed in the information disclosure statement submitted on the following dates; 10-1-2003, 4-30-2004, 12-7-2004, 4-8-2005 and 9-27-2005 have been considered by the examiner (see attached PTO-1449).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 to 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Itakura (USP 6986093 B2) in view of Yang et al. (USP 6389571 B1).

Claims 1 and 6:

Itakura substantially teaches the claimed invention. Itakura teaches an optical disk using a magneto-optical disk as a recording medium comprising: a writing system with an optical head for writing to a magneto-optical disk (110) (see col. 5, lines 50 to 55) and a reading system with turbo coding for the data written and read from the disk (see col. 6, lines 20 to 28). Itakura also teaches that the read system includes an iterative decoder (47) for processing the PR channel wherein the decoder corresponds to the encoder (see col. 6, lines 40 to 45).

Itakura further teaches that the iterative decoder decodes the data according to a posterior probability (APP) decoding (471) wherein probabilities and log likelihood ratios are calculated for the detected sample values (see col. 6, lines 50 to 65). Itakura teaches that the recording/ reproducing system has an optical detector; however, fails to specifically teach that the detector detects burst noise contained in the data signal.

Yang in an analogous art teaches an error detection and correction device for a computer system that includes a hard disk drive with a read channel circuitry wherein the read channel circuitry includes a thermal asperity detector (214) for detecting an error burst of the data signal (see col. 4, lines 36 to 60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the read system of Itakura to include the thermal asperity (TA) detector as taught by Yang since, Yang teaches that detecting a read errors in a hard disk drive is done effectively by monitoring the TA (see col. 2, lines 28 to 50). This modification would have been obvious because a person of ordinary skill in the art would have been

Art Unit: 2133

motivated to employ an effective system for detecting read errors in a hard disk drive as taught by Yang.

As per claims **2, 3, 8** and **11**, Itakura does not specifically teach an error correction unit which executes error correction... including erasure correction according to the detection result by the detection unit; however, Yang teaches that the disk drive includes an error detection and correction (EDAC) circuitry (210) receiving the thermal asperity detect (TAD) signal, providing an error correction process using the TAD signal as an erasure (see col. 5, lines 33 to 62). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the read system of Itakura to include the EDAC circuitry as taught by Yang. This modification would have been obvious because a person of ordinary skill in the art would have been motivated to employ an effective system for detecting and correcting read errors in a hard disk drive by utilizing the TA event as taught by Yang (see col. 2, lines 1 et seq.).

As to the further limitation of the claims, Yang teaches that the TAD signal is outputted based on a comparison result of the monitored TA signal for a shift in voltage against a threshold value (see col. 5, lines 1 to 20).

As per claims **4** and **9**, Itakura teaches that the iterative decoder includes an APP decoding unit having an inner decoder and an outer decoder (see fig 5) wherein the first APP decoder (471) executes a decoding process on the received sample values (see col. 6, lines 51 to 65) and the second APP decoder (474) decodes the anterior information (see col. 7, lines 15 to 26). Itakura also teaches that the decoding process is a turbo decoding wherein the encoding device is configured with two recursive

convolutional encoders and the decoders correspond to the encoders (see col. 1, lines 50 to 60).

As per claims **5** and **10**, Itakura teaches that the iterative decoder includes an APP decoding unit having an inner decoder and an outer decoder (see fig 5) wherein the first APP decoder (471) executes a decoding process on the received sample values (see col. 6, lines 51 to 65) and the second APP decoder (474) process the anterior information (see col. 7, lines 15 to 26). Itakura also teaches that the decoding process is a turbo decoding wherein the encoding device is configured with two recursive convolutional encoders (see col. 1, lines 50 to 60) and a hard decision unit (477) for deciding the final decoding sequence based on data output from the second decoder (474) (see col. 7, lines 55 to 67).

As per claim **7**, Itakura teaches that the read system includes an analog/digital (A/D) converter (45) converting the equalized signals into digital values (see col. 6, lines 29 to 35) and an equalizer (44) for providing partial response waveform (see col. 6, lines 15 to 24). Itakura also teaches that the iterative decoder decodes equalized data (see col. 6, lines 28 to 30); however, fails to specifically teach that the detection unit detects the burst noise on the basis of an amplitude value of the digital signal outputted from the A/D converter.

Yang in an analogous art teaches a read channel circuitry comprising a thermal asperity detector that monitors the read signal for a shift in voltage and outputs a TA detect (TAD) signal if the TA is larger than a threshold (see col. 5, lines 1 to 11).

Therefore, it would have been obvious to one having ordinary skill in the art at the time

Art Unit: 2133

the invention was made to modify the read system of Itakura to include a TA detector monitoring the read signal as taught by Yang since, Yang teaches that utilizing TA for error detection and correction in disk drives is an effective method for processing the sector data (see col. 3, lines 1 to 20). This modification would have been obvious because a person of ordinary skill in the art would have been motivated to employ an effective and efficient method of detecting and correcting errors in a disk drive as taught by Yang.

Claims **12 to 15** refers to the method for the apparatus recited in claims 1, 2, 4 and 5, since these claims are similar to the rejected claims except for the method steps, these claims are rejected under the same rationale applied to claims 1, 2, 4 and 5.

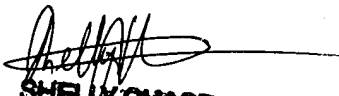
Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelly A. Chase whose telephone number is 571-272-3816. The examiner can normally be reached on Mon-Thur from 8:00 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on 571-272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2133

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


SHELLY CHASE
PRIMARY EXAMINER